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The Use of Harmonic Training in Developing Some Motor Capabilities and Offensive Skills in Handball

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Abstract: *This section includes the introduction and research problem, represented by the obvious weakness found in handball players when performing the offensive skills. The researchers attributed this to the lack of harmony and sense of the ball among the players, resulting from the lack of concentration of many coaches on this aspect, which led researchers to address this problem in an attempt to resolve it through the use of harmonic training and knowing the extent of its effects on the development of some motor capabilities and offensive skills in handball of the second stage students in the Faculty of Physical Education and Sport Sciences. The objectives included identifying the effects of harmonic training in the development of some motor capabilities and skills and offensive skills of the experimental and control groups for students of the second stage handball. As well as the hypotheses of research; there are statistically significant differences between the pre- and post-tests of the experimental and control groups in some offensive handball skills and in favor of the post-test. The study sample consisted of 20 students of the Faculty of Physical Education and Sport Sciences, Al-Mustansiriyah University, where the researchers concluded: It was found that harmonic training have a significant effect in the development of some offensive skills of handball in students of the second stage. The researchers recommended: the need to use harmonic training in the main part of the time of the educational module because of its positive and effective influence at the level of performance.*

Keywords: *Harmonic Training, Development, Offensive Skills, Motor Capabilities*

I. INTRODUCTION

Handball is one of the most widely practiced sports in the world and it occupies a good position as it is an interesting game and contains defensive and offensive skills that players should highly learn and master in training. Handball is a team game that relies mainly on different sciences such as training and motor sciences etc. handball is characterized by their diversified basic skills in the attack and defense, and it depends on the player's physical, skill, planning and psychological capabilities to achieve the best results because the continuous development in this game requires an evolution in the preparation of players from all physical, skills, psychological and other aspects related to the game through the use of various training and learning methods.

Therefore, harmonic abilities are one of the most important factors to improving the level of learning, which is reflected in the technical performance of learners in acquiring the basic skills and linking them so that they serve the integrated performance, where they emerge from the qualitative analysis of specialized sports activity, their improvement and development serves the tactical and technical aspect significantly. Harmonic capabilities are among the means that control the various motor performances, therefore, the availability of these capabilities in the

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learners enable them to reach the best performance harmony possible required to achieving any motor performance.[2]

Hence, the importance of the research lies in the importance of harmonic abilities, which is reflected in the quality of motor performance, speed of kinetic learning, the ability to adapt mental motor programs to the changing circumstances of implementation, and according to performance requirements, in addition to the integrity of the body's internal organs. Therefore, the researcher considered using harmonic training and learning its effects in developing some motor capabilities and offensive skills of handball among the second stage handball students.

II. RESEARCH PROBLEM

Through the observation of the researchers as well as their practice of the game as players and coaches have found a clear weakness in the players' offensive performance. The researchers attributed this to the lack of harmony and sense of the ball among the players, due to the lack of concentration of many coaches on this aspect, which led the researchers to address this problem in an attempt to solve it through the use of harmonic training and knowing the extent of its effects on the development of some motor capabilities and offensive skills in handball of the second stage students in the Faculty of Physical Education and Sport Sciences.

III. RESEARCH OBJECTIVES

1- Developing a set of harmonic training for the second stage handball students.

2 - Identifying the effects of harmonic training on the development of some of the motor skills and offensive skills of the experimental and control groups of the second stage handball students.

IV. RESEARCH METHODOLOGY AND FIELD PROCEDURES

1. Research Methodology

The empirical method was used as it is suitable for the research sample and to achieve its objectives and hypotheses.

2. Research Sample

The research sample is the part that represents the community of the origin or model on which the researchers conduct their overall focus of work. The research community consisted of students of the second stage in the Faculty of Physical Education and Sport Sciences, Al- Mustansiriyah University. The sample comprised of 20 students, and the equivalence of the research sample was conducted in the research variables. As shown in table 1 and 2.

Table 1: The Arithmetic Means, Standard Deviations and Calculated T-Value in the Motor Abilities Tests for the Control and Experimental Groups

Variables	Measurement unit	The control group		The experimental group		Calculated T-value	Statistical significance
		M	SD	M	SD		
Agility	Time (sec.)	**12.47**	**0.98**	**12.21**	**0.67**	**0.68**	Insignificant
Harmony	No.	**8.30**	**2.45**	**9**	**2.67**	**0.68**	Insignificant
Balance	Time (sec.)	**23.43**	**1.14**	**23.45**	**1.28**	**0.61**	Insignificant

Motor response	Time (sec.)	**22.25**	**1.45**	**22.15**	**1.95**	**0.035**	Insignificant

T table value at 18 freedom degree and under 0.05 significant level = 2.10.

Table 2: The Arithmetic Means, Standard Deviations and Calculated T-Value in the Offensive Skills Tests for the Control and Experimental Groups

Variables	Measurement unit	The control group		The experimental group		Calculated T-value	Statistical significance
		M	SD	M	SD		
In place shoot	No.	**5.90**	**1.37**	**6.10**	**1.45**	**0.317**	Insignificant
Jump shoot	No.	**4.90**	**1.19**	**5.10**	**1.37**	**0.348**	Insignificant
Dribbling	Time (sec.)	**17.80**	**2.66**	**18.10**	**1.73**	**0.299**	Insignificant
Handling	No.	**9.97**	**0.86**	**10.25**	**0.68**	**0.795**	Insignificant

T table value at 18 freedom degree and under 0.05 significant level = 2.10.

Table 1 and 2 show that the calculated T-value is smaller than the T table value, which indicates that there are no statistically significant differences between the two groups in the pre-test, which indicates the equivalence of the two research groups in the variables of motor skills and offensive skills.

Measurement Scientific Bases

The validity of measurement is one of the most important conditions for a good test. The honest test is what allows the measurement for what is put for it.[3] The tests were presented to a group of expert professors, therefore, the researchers used the sincerity of the content based on the views of experts and specialists in the field of sports.

Measurement Consistency:

In order to find the consistency of the test, the retest method was used to find the consistency coefficient. “In this way the test can be performed on the same group twice or more under similar conditions as much as possible”.[4] The same test was repeated seven days later and under the same conditions a second time on the sample. Later Pearson's simple correlation law was used to find the consistency of the tests. The consistency ratio was 0.89.

V. OBJECTIVITY:

Objectivity was found using the simple Pearson correlation between the results of the referees and all tests were highly objective. It is one of the important conditions for a good test, which means "no impact of subjective judgments by the researcher or that there is objectivity without discrimination and self-intervention by the experimenter, and the more unaffected by the subjective judgments the greater the value of objectivity will be".[5]

Research Field Procedures

1 Research Sample Pre-Tests:

The pre-test tests of the research sample of the skill and motor capabilities tests were conducted in two consecutive days. The conditions of all the tests were fixed in terms of time, place, instruments used and method of implementation in order to control as much as possible the creation of similar conditions when conducting post-tests.

2 Main Trial:

Harmonic exercises, as shown in appendix 1, of some motor abilities and offensive skills in handball skills were applied on the second stage of the experimental group. The program was also applied to the students of the control group during the time period 22 October 2017 until 24 December 2017. The curriculum took eight weeks, one teaching module per week, totaling 8 modules of 90 minutes for the one teaching module. Appendix 2.

3 Post-Test:

The post tests of the students of the experimental and control groups were conducted under the same conditions and time of the pre-test to measure the motor capabilities and offensive skills in handball on 31 December 2017.

Statistical Means:

The two researchers used the Statistical Package (SPSS) software, to process and analyse the data obtained.

Presentation, analysis and discussion of results

1. Presentation and analysis of results

Presentation of the results of the motor capabilities and offensive skills among the students of the second stage in the Faculty of Physical Education and Sport Sciences.

- Presentation and analysis of the results of the post tests between the control and experimental groups in the motor capabilities:

Table 3: The Arithmetic Means, Standard Deviations and Calculated T-Value in the Motor Capabilities Tests for the Control and Experimental Groups

Variables	Measurement unit	The control group		The experimental group		Calculated T-value	Statistical significance
		M	SD	M	SD		
Agility	Time (sec.)	11.89	0.77	10.62	0.62	4.03	Significant
Harmony	No.	9.60	2.22	13.70	2.31	4.04	Significant
Balance	Time (sec.)	22.45	1.77	20.22	0.78	5.36	Significant
Kinetic response	Time (sec.)	21.29	1.12	19.78	0.86	3.39	Significant

T table value at 18 freedom degree and under 0.05 significant level = 2.10.

Table 3 shows the arithmetic mean, standard deviation, calculated T-value and the type of difference between the two groups in kinetic abilities and for the post test, we find that the arithmetic mean of agility test of the control group is 11.89 and standard deviation is 0.77, while the arithmetic mean of the experimental group is 10.62 with 0.62 deviation. And when calculating the T-value we find it 4.03 higher than the table grade which is 2.10 at the degree of freedom 18 and under 0.05 significance level, this indicate that the difference that the difference is significant and in favor of the experimental group.

In the harmony test the arithmetic mean of the control group was 9.60 with 2.22 standard deviation, while the arithmetic mean of the experimental group was 13.70 and the deviation 2.31. When calculating the T-value we find it 4.04, which is higher than the table grade which is 2.10 at the degree of freedom 18 and under significance level of 0.05. This indicates that the difference is significant and in favor of the experimental group.

In the balance test, we find the arithmetic mean of the control group is 22.45, with a 1.77 standard deviation, while the arithmetic mean of the experimental group was 20.22 with a 0.78 deviation. When calculating T-value we find it 5.36, which is greater than the table grade which is 2.10 at 18 freedom degree and under the significance level 0.05. This shows that the difference is significant between the control and experimental groups and in favor of the experimental group.

As for the kinetic response test, the arithmetic mean of the control group was 21.29 and standard deviation 1.12, while the arithmetic mean of the experimental group was 19.78 and the deviation 0.86. When calculating T value we find it 3.39, which is higher than the table grade which is 2.10 at the degree of freedom 18 and under the significance level 0.05. This shows that the difference is significant and in favor of the experimental group.

- Presentation and Analysis of the Results of the Post Tests between the Control and Experimental Groups in the Offensive Skills:

Table 4: The Arithmetic Means, Standard Deviations and Calculated T Value in the Post-Tests Offensive Skills for the Control and Experimental Groups

Variables	Measurement unit	The control group		The experimental group		Calculated T-value	Statistical significance
		M	SD	M	SD		
In place shot	No.	6.70	0.82	9.40	1.08	6.31	Significant
Jump shot	No.	5.50	1.08	8.10	1.19	5.10	Significant
Dribbling	Time (sec.)	9.91	0.58	9.06	0.16	4.44	Significant
Handling	No.	19.20	1.62	23.50	1.27	6.61	Significant

T table value at 18 freedom degree and under 0.05 significant level = 2.10.

Table 4 shows the arithmetic mean, standard deviation, calculated T-value and the type of difference between the control and experimental groups in basic skills and for the post test, we find that the arithmetic mean of the in place shot test of the control group is 6.70 and the standard deviation is 0.82, while the arithmetic mean of the experimental group is 9.40 with 1.08 deviation. And when calculating the T-value we find it 6.31 which is higher than the table grade which is 2.10 at the degree of freedom 18 and under 0.05 significance level, this indicate that the difference that the difference is significant and in favor of the experimental group.

In the jump shot test, the arithmetic mean of the control group was 5.50 with 1.08 standard deviation, while the arithmetic mean of the experimental group was 8.10 and the deviation was 1.19. When calculating the T-value we find it 5.10, which is higher than the table grade which is 2.10 at the degree of freedom 18 and under significance level of 0.05. This indicates that the difference is significant and in favor of the experimental group.

As for the zigzag dribbling, the arithmetic mean of the control group was 9.91 and the standard deviation was 0.58, while the arithmetic mean of the experimental group was 9.06 and the deviation 0.16. When calculating T

value we find it 4.44, which is higher than the table grade which is 2.10 at the degree of freedom 18 and under the significance level 0.05. This shows that the difference is significant and in favor of the experimental group.

In the handling test, the arithmetic mean of the control group is 19.20, with a 1.62 standard deviation, while the arithmetic mean of the experimental group is 23.50 with a 1.27 deviation. When calculating T-value we find it 6.61, which is greater than the table grade which is 2.10 at 18 freedom degree and under the significance level 0.05. This shows that the difference is significant and is in favor of the experimental group.

- Presentation and Analysis of the Development Ratios of the Control and Experimental Groups between the Pre–and Post-Tests:

Table 5: The Ratios of the Control and Experimental Groups between the Pre- and Post Tests in Study Variables

S	Tests	Measurement unit	Development ratios of the control group	Development ratios of the experimental group
1.	Agility	Time (sec)	**4.9%**	**15%**
2.	Harmony	No.	**15.7%**	**34.3%**
3.	Balance	Time (sec)	**4.4%**	**9.5%**
4.	Kinetic response	Time (sec)	**4.51%**	**10.7%**
5.	In place shot	No.	**1.36%**	**35%**
6.	Jump shot	No.	**12.3%**	**37%**
7.	Dribbling	Time (sec)	**0.71%**	**11.6%**
8.	Handling	No.	**7.87%**	**23%**

Table 5 shows the development ratios between the pre- and post-tests of the control and experimental groups. The control group achieved 4.9% development rates in motor abilities in the agility test, harmony test 15.7%, balance test (4.4%) and in the kinetic response test 4.51%.

The development ratios achieved by the control group in the offensive skills were 1.36% in the in place shot test, 12.3% in jump shot test, 0.71% in dribbling test and 7.87% in the handling test.

The development ratios achieved by the experimental group in the motor capabilities were 15% in the agility test, 34.3% in harmony test, 9.5% in balance test and 10.7% in the kinetic response. The development ratios achieved by the experimental group in the offensive skills were 35% in the in place shot test, 37% in jump shot test, 11.6% in dribbling test and 23% in the handling test.

VI. CONCLUSIONS:

After obtaining the final results, the researchers were able to reach the following conclusions:

1. It was found that harmonic training has a significant effect on the development of motor capabilities of handball second stage students.

2. It was found that the harmonic training has a significant effect in the development of some offensive skills of the handball second stage students.

3. The use of varied exercises has an effect that commensurate with the capabilities of the handball second stage students.

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